

**ABSTRACT****Modality Goal Programming Problems**

Masahiro Inuiguchi    Yasufumi Kume  
*University of Osaka Prefecture*

In this paper, a general fuzzy mathematical programming problem is formulated, considering the difference between the fuzziness in the preference of the decision maker and the fuzziness in the coefficients. While the fuzziness in the preference of the decision maker expresses the indefiniteness in nature or character as idea, feelings, etc., the fuzziness in the coefficients expresses uncertainty on the coefficients. Firstly, the fuzziness in the preference of decision maker is represented by fuzzy goals given on the deviations of right-hand sides from left-hand sides in the constraints as treated in flexible programming. On the other hand, the fuzziness in the coefficients is represented by possibility distributions, and the deviations of right-hand sides from left-hand sides are obtained as possibility distributions. At this juncture, two kinds of deviational possibility distributions can be considered. One is the possibility distribution obtained through all possible combinations of values restricted by two possibility distributions, and the other is the possibility distribution which is necessary for a possibility distribution to coincide with the other possibility distribution. Using the possibility measures and the necessity measures derived from deviational possibility distributions, the fuzzy mathematical programming problem is formulated. Next, since the idea of goal programming is close to that of flexible programming, given a regret function as a preference model of the decision maker and a fuzzy goal on the regret function space, the fuzzy mathematical programming problem is formulated again in the similar manner of goal programming. A numerical example is given to illustrate their ideas. Lastly, the formulated problems based on the ideas of flexible programming and goal programming are compared. It is shown that the problem based on the idea of goal programming is a special case of the problem based on the idea of flexible programming, when the membership value of the decision set is regarded as the degree of satisfaction of the decision maker.